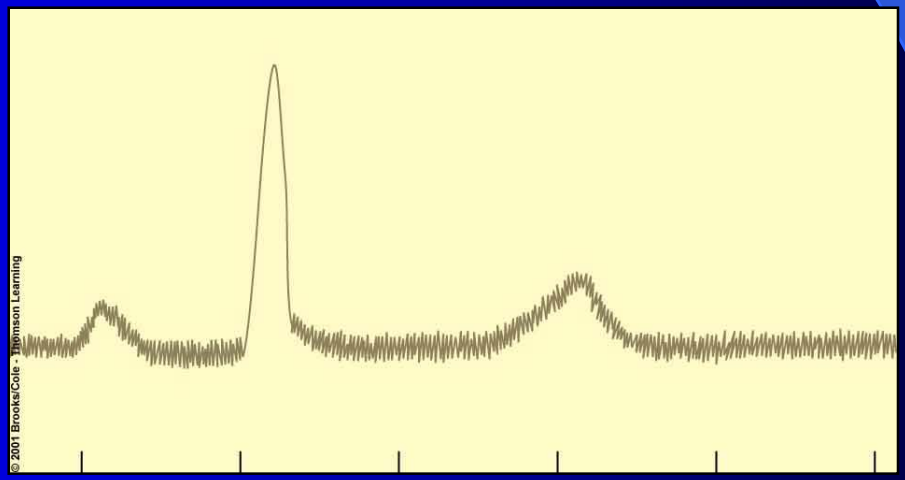
The Circulatory System

Conduction System and the Cardiac Cycle

Conduction

- Your heart beat starts and is sent through your heart without any external stimulation
- This happens through your conduction system



Your Conduction System

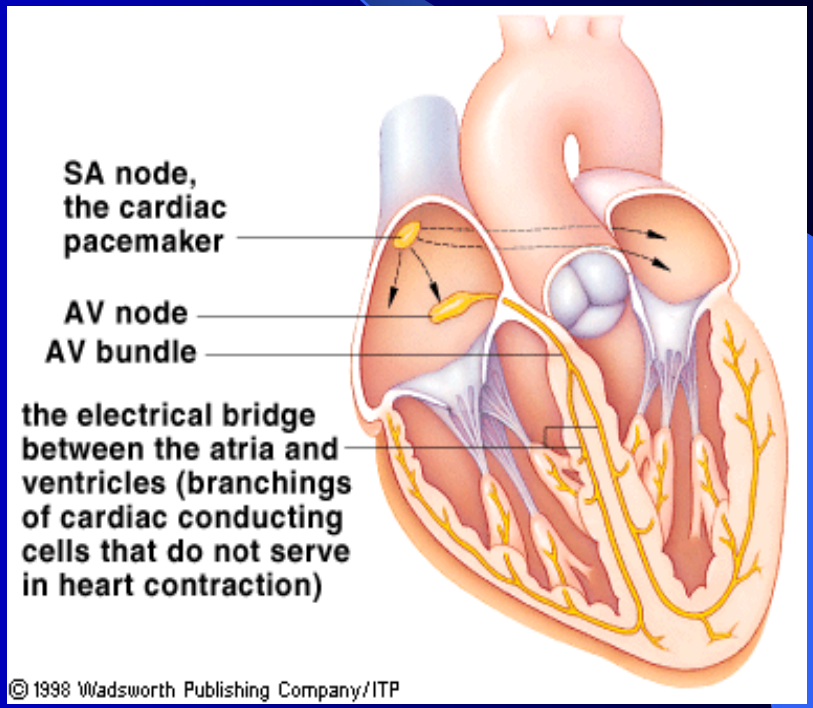
- Has specialized cardiac muscle tissue, called nodal tissues
- These tissues start and distribute electrical impulses

Components of CS

1. The sinoatrial node (SA node)
2. The atrioventricular node (AV node)
3. The atrioventricular bundle (bundle of His)
4. The conduction myofibers (Purkinje fibers)

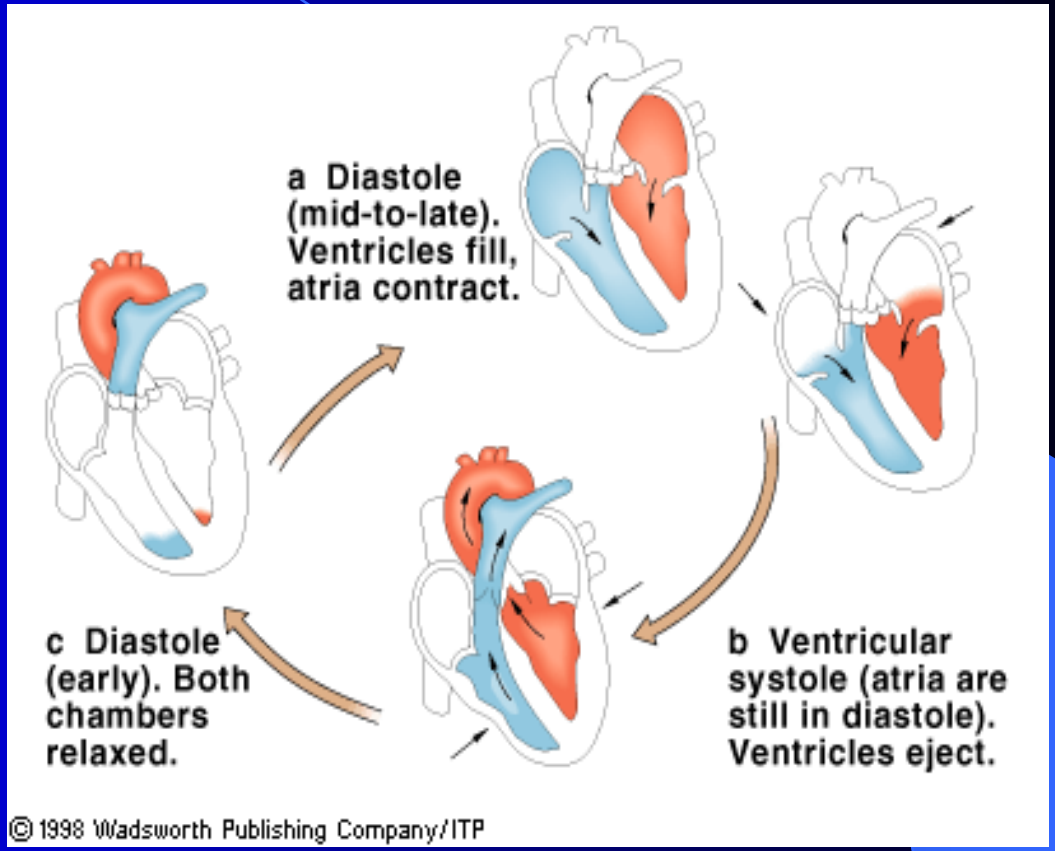
The System in Action

- The SA node fires and an impulse passes through the atria – they contract
- The AV node picks up the impulse & passes it to the AV bundle
- It spreads through the ventricles via the purkinje fibers and the ventricles contract



Cardiac Cycle

- **Systole (contraction)**
- **Diastole (relaxation)**
- **Closure/Opening of valves**

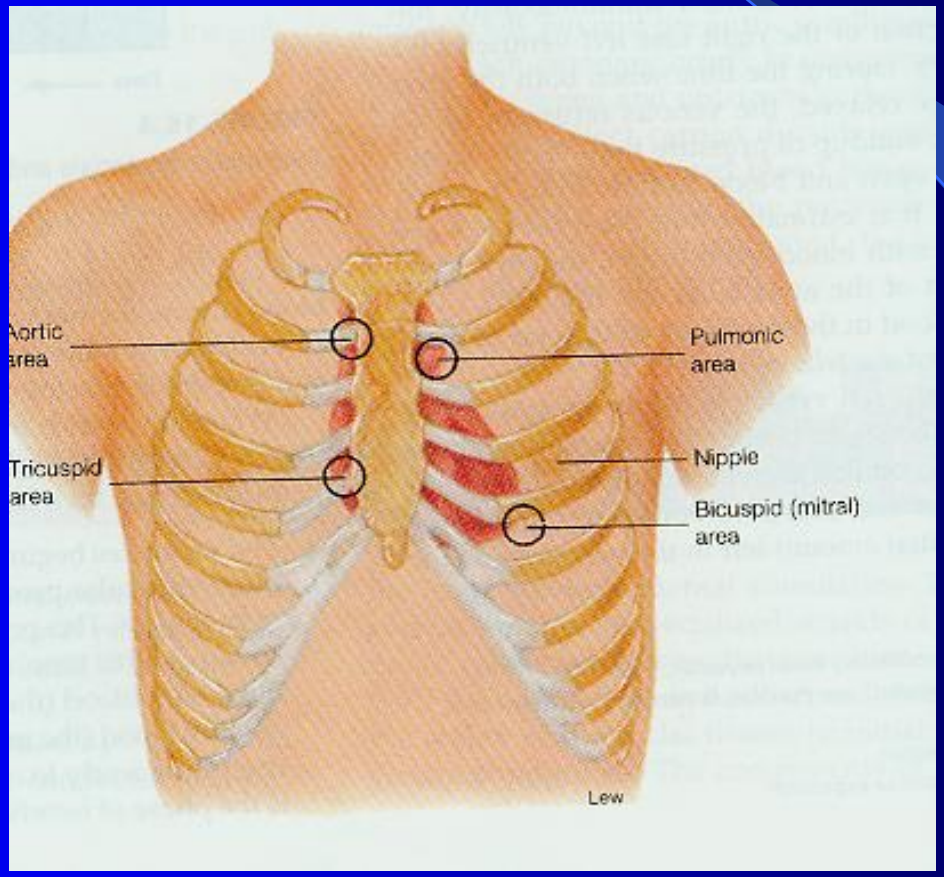


Contraction of Ventricles is the force for blood flow

The Cardiac Cycle

- Ventricles contract & the pressure rises, AV valves snap shut – causes “lub” sound
- When the pressure in the l. ventricle becomes greater than the aorta, the aortic similunar valve opens
- Blood flows into the aorta
- Pressure drops in the l. ventricle and the semilunar valve snap shut – “dub” sound
- The pressure is now lower in the ventricles than the atria – the av valves open
- Atrial systole empties all blood from the atria into the ventricles

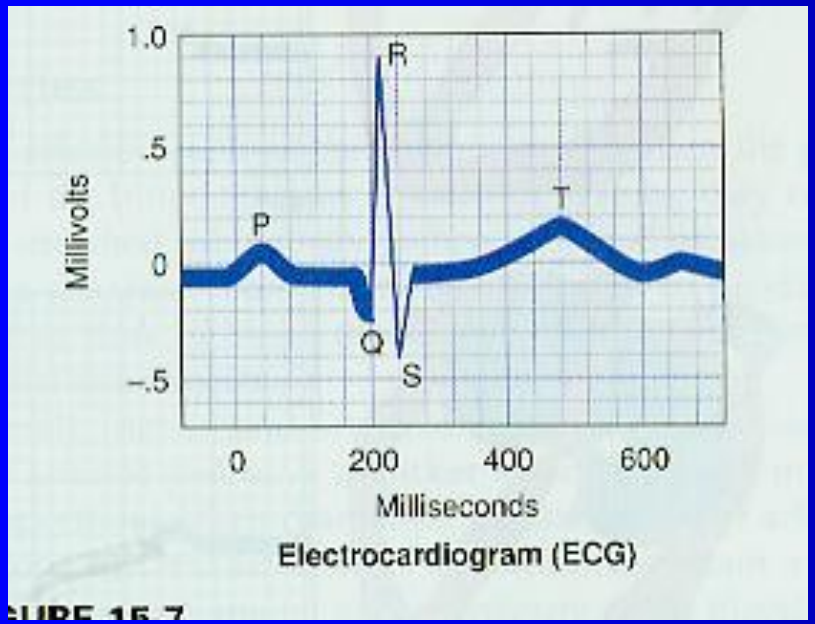
Heart Sounds



Electrocardiogram

- Electrodes placed on the skin over the heart provides a “picture” of the electrical activity of the heart
- This picture is called an electrocardiogram (ECG or EKG)
- The recording machine is called an electrocardiograph

ECG



- P Wave: Stimulation of SA node and depolarization of the atria – they contract
- QRS Wave: depolarization of the ventricles – ventricle contraction
- T Wave: resting phase (your heart is at rest)